

**JOINT STATEMENT OF DR. HAIDER, DR. MCCLAVE, AND DR. SINGER**

The following are the positions of Dr. Haider, Dr. McClave, and Dr. Singer on the top eight agreed upon “issues of disagreement” for the concurrent expert witness proceeding to be held on September 17, 2019:

**1. Dr. McClave's Method for Assessing Classwide Impact**

**Dr. Haider's Position**

Dr. McClave's method for assessing class-wide impact (based on a single average overcharge for each dielectric) is, in fact, incapable of showing impact for any particular customer. He subtracts the same overcharge percentage to calculate a but-for price for each sales transaction, and his conclusion that “all or nearly all customers were impacted” is an inevitable outcome of his uniform overcharge assumption. His method—despite its superficial appearance of allowing variation in estimated overcharges—is both misleading and unreliable.

**Dr. McClave's and Dr. Singer's Position**

In a price-fixing case, a standard methodology for measuring antitrust impact and damage involves calculating the difference between the actual price paid and the price a customer (class member) would have paid but for the Conspiracy, where the but-for price is determined by a properly specified regression model. The first step is to use standard and well-accepted regression methods to estimate the amount, if any, by which prices were elevated after accounting for important Market Factors (competitive economic factors, i.e., supply and demand) unrelated to the Conspiracy that affect price. If the regression shows that prices were in fact elevated, antitrust impact is assessed by using the regression model to estimate but-for prices for every transaction in the class period, and then comparing the but-for prices to the actual prices paid by class members.

## **2. The Role of Qualitative Evidence**

### Dr. Haider's Position

It is improper for Dr. Singer to rely on documentary evidence as a justification for a one-size-fits-all regression model that assumes the same overcharge across all Defendants, all customers, and all 12 years of the alleged conduct for each dielectric/sub-type. Indeed, as stated by Nobel Prize winning economist George Stigler, an economist “has no special skill in reading documents and relating them to actual behavior.”<sup>1</sup> Instead, a scientific approach requires that assumptions or conclusions derived from document review be subjected to empirical testing.

### Dr. McClave's and Dr. Singer's Position

Dr. Singer appropriately concludes that qualitative evidence relating to the alleged conspiracy is, for all Defendants, consistent with collusion and inconsistent with unilateral conduct, based on standard economic principles. The qualitative evidence analyzed by Dr. Singer justifies studying the impact of the challenged conduct across all Defendants and products using a single regression model. The qualitative and quantitative analyses undertaken by Dr. Singer demonstrate that all Defendants participated in the Challenged Conduct.

## **3. Single Overcharge vs. Annual Overcharges**

### Dr. Haider's Position

Dr. McClave's approach assumes the same overcharge in each year during the 12-year class period for a given dielectric. Statistical testing rejects Dr. McClave's restrictive assumption that the alleged conduct had the same or uniform effect in each year. When Dr. McClave's estimated overcharges are, in fact, allowed to vary over time, there are negative and statistically significant overcharges for most of the class period.

---

<sup>1</sup> George J. Stigler, “What Does an Economist Know?” Journal of Legal Education, 33(2), 1983, pp. 311-313 at 311.

### Dr. McClave's and Dr. Singer's Position

In a price-fixing case, it is standard to use a multiple regression model to measure the price effect of the alleged Conspiracy with the coefficient on an indicator variable that is equal to one during the Conspiracy period, and equal to zero outside the Conspiracy period. Dr. Haider's inclusion of annual Conspiracy indicator variables in the regression model conflates the effects of Market Factors on prices with those of the Conspiracy, making it impossible to disentangle the price effects of Market Factors from those of the Conspiracy. Drs. McClave and Singer made no assumption that the conspiracy effect was constant over time, customers, or any other group of transactions.

## **4. Dr. McClave's Regression Model and the Question of Causation**

### Dr. Haider's Position

Dr. McClave's regression model does not permit the fact finder to determine whether the effects of the alleged conduct extended to all or virtually all class members or instead were limited to some class members, some Defendants' products, or some years during the 12-year class period. Moreover, he does not establish a causal link between the alleged conduct and his estimated overcharges because of his failure to account for relevant economic factors and his inappropriate treatment of supply and demand factors. As a result, his approach is incapable of reliably establishing economic injury or damages caused by the alleged conduct to all or virtually all class members.

### Dr. McClave's and Dr. Singer's Position

Dr. McClave's regression model directly informs the question of causation—namely, whether the challenged conduct caused capacitor prices to be higher than they would have been but for the Conspiracy. If a reliable, well-specified regression model properly accounts for Market Factors, a positive and statistically significant coefficient on the Conspiracy indicator variable is appropriately interpreted as evidence of, and a measure of, the effect of non-competitive factors on price—i.e. the Conspiracy effect. Dr. McClave and his staff spent thousands of hours reviewing tens of thousands of documents and data files, which

informed his analysis and led to the specific Market Factors included in his model.

## **5. Role of Quadratic Time Variables**

### **Dr. Haider's Position**

Dr. McClave's overcharges for aluminum and film capacitors are driven solely by the inclusion of a quadratic time variable. Not only does Dr. McClave provide no economic rationale for the inclusion of this variable, he fails to provide any economic explanation for the resulting U-shaped price trends he estimates for these capacitors. This renders his approach unreliable.

### **Dr. McClave's and Dr. Singer's Position**

Linear and quadratic time trend variables are standard in econometrics, are appropriately included in the regression models proffered by Drs. McClave and Singer, and help the regression model to account for Market Factors; the additional flexibility provided by the quadratic time trend terms is supported by the actual price trends in the data. Each of the quadratic terms is highly statistically significant and economically sensible in the regression models proffered by Drs. McClave and Singer, and the fit of the model improves when they are included. Removal of the quadratic time trend results in negative price-cost and price-demand relationships for Aluminum and Film, contrary to elementary economic principles and common sense.

## **6. Omitted Variables**

### **Dr. Haider's Position**

An economic methodology that purports to establish economic injury to approximately 1,800 DPP class members purchasing over 140,000 aluminum, tantalum, and film capacitor products from more than 20 Defendant manufacturers during the alleged 12-year conspiracy must account for the different economic positions and circumstances of various class members, which would affect the prices they paid for these products over time. Dr. McClave's failure to account for various real-world economic

factors facing different customers over time (such as competition from non-Defendant suppliers, competition from ceramic capacitors, the negotiating abilities and purchasing patterns of different customers over time, and various industry shocks) renders his approach unreliable.

#### Dr. McClave's and Dr. Singer's Position

The supply and demand variables in the regressions specified by Drs. McClave and Singer appropriately capture supply and demand for the relevant capacitor products. Drs. McClave and Singer have shown their regression models to be robust to the inclusion of Defendants' experts' alleged omitted economic variables, including those identified in Dr. Haider's expert report. The estimated price relationships in a reliable regression model should be economically sensible, e.g., the coefficients of cost and demand variables should be positive, indicating that a higher cost or demand leads to a higher price.

### **7. R-Squared and Fixed Effects**

#### Dr. Haider's Position

It is well-recognized in the economics profession that a high R-squared value does not imply that a regression model is properly specified or that it yields reliable results—it is incorrect for Dr. McClave to claim otherwise. Moreover, his 0.987 R-squared value stems from the inclusion of his fixed effect variables, which do not explain any changes over time (over the 16-17 years of study) in prices paid by customers for products they purchased. In fact, Dr. McClave's few time-varying factors—including the overcharge variable—explain only about 10% of the price variation over time for a given product and customer, and thus, any attempt to justify his approach by citing the R-squared value is both misleading and improper.

#### Dr. McClave's and Dr. Singer's Position

The regressions specified by Drs. McClave and Singer explain 98.7% of the price variation for the relevant capacitors during the Benchmark and Conspiracy periods. Differences in products and customers, and their effects on prices are why the customer-product fixed effects are included in the regression

model, as is standard econometric practice. The inclusion of fixed effects in no way yields pre-ordained results, as evidenced by the many economically nonsensical results produced by Defendants' experts' models that include the same fixed effects.

#### **8. Products and Customers Only in the Class Period (and not in the Benchmark Period)**

##### Dr. Haider's Position

Dr. McClave's estimated overcharges are identified from less than half of the capacitor products sold in the class period and from only a subset of class members. This comes about because 53% of products sold in the class period were not in fact sold in the benchmark period, and more than 40% of class members did not make any purchases in the benchmark period. Dr. McClave's methodology is improper as it fails to establish any injury or overcharges for a substantial proportion of the products and class members for which the DPP class claims damages.

##### Dr. McClave's and Dr. Singer's Position

In the regressions specified by Drs. McClave and Singer, customers and products occurring only during the Class Period contribute directly to the econometric estimates of supply and demand relationships, and indirectly to the econometric overcharge estimate. Dr. McClave addressed Dr. Haider's concern of products sold only during the Class Period by specifying a regression model that incorporated a broader definition of products, improving the occurrence of products sold in both the Class and Benchmark Periods to 98% of class sales, and resulting in strikingly similar price relationships and slightly higher overcharge estimates. Dr. McClave demonstrated that prices for customers and products occurring only during the Class Period are positively and significantly correlated with prices for customers and products occurring in both the Benchmark and Class Periods.